

**Abstract**

Method for detecting of the change of a physically measurable property of a sample due to an environmental effect, in which

- (i) the sample is subjected to the environmental effect for an action time  $\Delta t$ , the environmental effect being made to act on the sample with a known position-dependent intensity distribution  $I(x, y)$  (intensity pattern), which is based on a pattern function  $M(x, y)$ ,
- (ii) the transmission, reflection or scattering of analysis radiation by the sample is subsequently detected as a function of the position coordinates  $(x, y)$  of the sample and the wavelength  $\lambda$  of the analysis radiation, so as to determine a response function  $A(x, y, \lambda)$  which describes the intensity of the transmitted, reflected or scattered analysis radiation as a function of the position coordinates  $(x, y)$  of the sample and the wavelength  $\lambda$ ,
- (iii) the correlation of the known position-dependent intensity distribution  $I(x, y)$  of the environmental effect, or of the pattern function  $M(x, y)$  on which is based, with the response function  $A(x, y, \lambda)$  is determined by correlation analysis, this correlation being a measure of the change of the physically measurable property of the sample due to the environmental effect.

(Figure 1)